

IN THE CLAIMS:

The following listing of claims supercedes and replaces all prior versions in the patent application:

Claims 1-10. (canceled)

Claim 11. (currently amended). An optics polarization beam splitter for separating orthogonal components of an incident optical signal using an asymmetric Mach-Zehnder interferometer, comprising:

an input optical coupler to split an incident optical signal, which has two orthogonal polarization states, into a first waveguide branch and a second waveguide branch wherein said first waveguide branch has a birefringent section that exhibits form ~~birefringence~~ birefringence to separate said two orthogonal polarization states and is of core material selected from the group consisting of silicon oxynitride (SiON), silicon nitride, ~~silicon oxycarbide~~, silicon (Si) and tantalum oxide-silica ( $\text{Ta}_2\text{O}_5:\text{SiO}_2$ ); the upper cladding is of silica ( $\text{SiO}_2$ ); and lower cladding is of thermal oxide; and

an output optical coupler to combine the optical signals outputted from said first waveguide branch and said second waveguide branch and to output two orthogonal output optical signals, wherein said two orthogonal polarization states are transverse electric (TE) mode and transverse magnetic (TM) mode;

Claim 12. (currently amended) An optics polarization beam splitter for separating orthogonal components of an incident optical signals using an asymmetric Mach-Zehnder interferometer, comprising:

an input optical coupler to split an incident optical signal, which has two orthogonal polarization states, into a first waveguide branch and second waveguide branch wherein said waveguide branch

has birefringent section that exhibits form birefringence to segregate said two orthogonal polarization states, and has a core material deposited by a process selected from the group consisting of flame hydrolysis, sputtering, and chemical vapor deposition; and

an output optical coupler to combine the optical signals outputted from said first waveguide branch and said second waveguide branch and to output two orthogonal polarization output optical signals, wherein said birefringent section is coated with a birefringent layer.

Claims 13-15. (canceled)